AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to Figure 15. In particular, the label "Pt20Ir" should be replaced with "Pt30Ir." This change is supported in the text describing Figure 15 on page 50, line 10.

Attachments: Replacement Sheet - one sheet replacing Figures 14 and 15.
Annotated Sheet showing change.

REMARKS

Claims 1-61 are pending in this application. Claim 1-36 have been rejected and claims 37-61 have been withdrawn from consideration. Claims 1, 2, 20, 21, 22, 23, 24, 25, 37, 38, 54, 55, 56, 57, and 59 have been amended. These amendments do not introduce new matter and find support in the specification. Support for the amendments may be found as follows:

Claim	Support
1	p. 14, lines 10-15.
2	Correct format.
20	p. 14, lines 10-15.
21	Correct format.
22	p. 14, lines 10-15.
23	Correct format.
24	p. 14, lines 10-15.
25	p. 7, line 8; p. 13, line 18-p. 14, line 9; p. 26, lines 5-23; and p. 32, lines 9-16
37	p. 14, lines 10-15.
38	Correct format.
54	p. 14, lines 10-15.
55	Correct format.
56	p. 14, lines 10-15.
57	Correct format.
59	p. 14, lines 10-15.

Claim 28 has been canceled. Applicants have included a claim status identifier with each claim in order to comply with C.F.R. 37 § 1.121 and respond to the Communication mailed on December 1, 2006.

Applicants express their appreciation to the Examiner and his supervisor for meeting with representatives of the Applicants in a personal telephone interview on December 6, 2006. The restriction requirement as well as the current rejections in view of Niyama (U.S. Patent No. 5,993,740), Wohlstadter (U.S. Patent No. 6,207,367),

Christensen (U.S. Patent No. 6.036,840), and Liljestrand (U.S. Patent No. 6,200, 531) were discussed in the interview. Amendments to the claims were proposed by the Examiner to overcome the rejections. Applicants appreciate the Examiner's helpful comments regarding the claim language and amendments. Those amendments, incorporating new limitations, are presented and discussed below. In view of the Examiner's request to amend the claims, any patent term adjustment due to the Applicants should not be negatively impacted by complying with the Examiner's request. 37 C.F.R. § 1.704(c)(8).

I. Restriction Requirement

The Examiner reiterated the previously issued restriction requirement:

> Groups I: Claims 1-36, drawn to an electrochemiluminescence cell with an electrode of platinum, iridium, or rhodium and alloys thereof;
>
> Group II: Claims 37-58, drawn to an electrochemiluminescence assay at an electrode of platinum, iridium, or rhodium and alloys thereof;
>
> Group III: Claims 59-61, drawn to a method of conducting an electrochemiluminescence assay comprising an electrochemiluminescence label and coreactant.

While Applicants traverse the restriction requirement, they affirm their provisional election to prosecute Group I, claims 1-36, drawn to an electrochemiluminescence cell with an electrode of platinum, iridium, or rhodium and alloys thereof.

Applicants believe that this restriction requirement is improper. The law requires that both (1) the inventions are independent and distinct, and (2) there would be a serious burden on the Examiner if the restriction was not required. M.P.E.P. § 803.

In order to show that a process and apparatus are independent and distinct, the Office must establish that the process as claimed can be practiced by another materially

different apparatus or by hand, or apparatus of the invention can be used to practice another materially different process. See MPEP § 806.05(3). The Office has stated "In this case, the apparatus can be used to practice another and materially different process such as one where the process does not include electrochemiluminescence." The Office, however, has not indicated what other non-ECL processes can be conducted in the ECL cells of the invention. Inventions of Group II, a method of conducting an electrochemiluminescence assay at an electrode of platinum, iridium, or rhodium and alloys thereof, and Group III, a method of conducting an electrochemiluminescence assay comprising an electrochemiluminescence label and coreactant, are methods of using the invention of Group I (the inventive electrochemiluminescence cell), and the Office has not asserted any other uses for the inventive ECL cell of the invention. The Examiner suggested amending the claims of all three groups requiring additional elements of the ECL cell, establishing that the apparatus only can be used for electrochemiluminescence methods. Therefore, Applicants have amended the claims to include further limitations, which define the invention of Group I to be an ECL cell, and similarly add these limitation to the assay (Group II) and method (Group III) claims. Thus, as Applicants have made the suggested amendments linking the Groups, Applicants request that the restriction requirement be withdrawn.

II. Claim Objections

The Examiner has objected to claims 5, 6, and 12 under 37 C.F.R. 1.75(c) as allegedly being of improper dependent form because they fail to further limit the subject matter of a previous claim.

Applicants respectfully traverse this objection. Applicants have previously stated that composition or apparatus claims can be defined both in terms of their structure and their function. In fact, the MPEP indicates that it is not wrong to do so.

MPEP § 2173.05(g).

Claims 5, 6, and 12 do limit the scope of the claims from which they depend. For example, claims 5, 6, and 12 provide useful limitations on working electrodes in ECL reaction, but are not necessary for counter electrodes. *See* specification, page 20, line 19 through page 21, line 4. The electrodes of claim 1 may be either working electrodes or counter electrodes. Applicants believe that there are electrodes that meet the limitation of claim 4 that do not meet the limitations of claim 5, electrodes that meet the limitation of claim 5 that do not meet the limitations of claim 6, and electrodes that meet the limitations of claim 11 that do not meet the limitations of claim 12. For at least those reasons, the rejection should be withdrawn.

III. Claim Rejections Under 35 U.S.C. § 112

The Examiner has rejected claims 5-19 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as their invention. The Examiner has reiterated that claims 5, 6, and 12 do not properly limit the preceding claims and pointed out that claims 7-11 are dependent on the rejected claims, thus rejecting claims 7-11 as well.

Here again, Applicants respectfully traverse this rejection. As discussed in the section immediately preceding this one, functional limitations are an acceptable way of defining the invention. For at least the reasons mentioned above, claims 5-19 are proper, and the rejection should be withdrawn.

IV. Claim Rejections Under 35 U.S.C. § 102

As discussed in the November 16, 2006, Response, the Examiner has rejected claims 1-3 and 22-24 under 35 U.S.C. § 102(b) as allegedly anticipated by *Niyama* (U.S. Pat. No. 5,993,740, "*Niyama*"). *Niyama* discloses an immunoassay method and analyzer by which, when magnetic particles are used as the solid phase, a luminescence from the solid phase can be measured with high sensitivity. The Examiner notes that *Niyama* discloses that the electrodes may be made of platinum, iridium, tungsten and alloys thereof.

Claims 1, 2, 20, 21, 22, 23, 24, 25, 37, 38, 54, 55, 56, 57, and 59 have been amended. The presently amended claims are not anticipated by *Niyama*. In particular, *Niyama* does not teach or even suggest the 5-50% range for the second component in the alloy. The second element could be present at a lower percentage, such as 1%, as the Examiner indicated was possible.

The applicants respectfully traverse this rejection. With respect to claims 2, 3, and 23, *Niyama* does not teach or even suggest the specific secondary metals of claims 2 and 23, nor does it indicate to any extent other metals that the alloys may contain. Because *Niyama* is silent to the identity of the alloy compositions, at best, this reference may make the alloys of claims 2, 3, and 23, obvious *to try*, but certainly not anticipated or obvious in view of *Niyama*. For at least this reason, this rejection should be withdrawn.

V. Claim Rejections Under 35 U.S.C. § 103

REJECTION OVER *NIYAMA*

As discussed in the November 16, 2006, Response, the Examiner has rejected claims 4-9 under 35 U.S.C. § 103(a) as being unpatentable over *Niyama*. The

Examiner alleges that "[i]t would have obvious to modify the *Niyama* device to include an alloy of platinum with a second weight percent in the range of 1% to 80% through use of different platinum alloy compositions made from the materials disclosed by *Niyama*." As mentioned above, *Niyama* does not teach or even suggest the specific secondary metals of the present invention. An alloy is defined as a "solid or liquid mixture of two or more metals, or of one or more metals with certain nonmetallic elements. . ." Richard J. Lewis, Sr., Hawley's Condensed Chemical Dictionary 36 (John Wiley & Sons, 2001). Based on this broad definition, one of skill would have to choose from among many possible alloy species to arrive at the presently claimed electrodes. The generic disclosure of *Niyama* may not render the present invention unpatentable. See In re Baird, 16 F.3d 380, 29 U.S.P.Q.2d 1550 (Fed. Cir. 1994). Furthermore, *Niyama* does not teach or suggest that the weight percent of the second element is from 5% to 50%, as the claims now require.

Additionally, Figure 10 and Example IV (specification, page 48, lines 18-21) of the present application show that tungsten, one of the metals suggested by *Niyama*, will not work as an electrode in an ECL cell, because "...W [tungsten] apparently form[s] self-passivating oxides; and the formation of oxides accounts for the very low current densities observed in FIG. 10." As described in the specification, page 16, lines 3-12 and elsewhere in this application and known in general, current is required for electrochemiluminescence. Thus, the teaching in *Niyama* is flawed and actually teaches away from the electrodes of the present invention.

Furthermore, in Figure 10 and Figure 11, and in the specification on page 48, line 22 through page 49, line 8, the application states that pure iridium electrodes would not

satisfy the functional limitation of claim 6. Consequently, iridium electrodes would not be expected to function well as a working electrode. Pure iridium electrodes are also taught by *Niyama*. Thus, the teaching in *Niyama* is flawed and would dissuade readers from experimentation.

Moreover, *Niyama* states in column 5 line 26: "The reason of using such a material is to prevent wear and corrosion of the electrode surface caused respectively by the electrode reaction and reagents flowing over the electrode to the extent possible." In the present application, Applicants demonstrate improvements, among other things, in using alloys of platinum and/or iridium over and beyond pure platinum. *Niyama* does not state or imply that alloys would be superior to the pure metals in his list. Further, in the examples of *Niyama* platinum was used for both the working electrode (column 8, line 40) and counter electrode (column 8, line 55). Here again, *Niyama* teaches away from using alloys. For at least these reasons, the rejection should be withdrawn.

REJECTION OVER *NIYAMA* IN VIEW OF *CHRISTENSEN*

The Examiner has rejected claims 20 and 21 under 35 U.S.C. 103(a) as being unpatentable over *Niyama* in view of *Christensen* (U.S. Patent No. 6,036,840, "*Christensen*"). The Examiner concedes that *Niyama* does not disclose the use of rhodium or rhodium alloy electrodes but points out that "*Christensen* discloses that the working electrode comprises an electrically conductive material such as a metallic material selected from the group of metals include Rh (rhodium) and alloys thereof, such that the working electrode has good catalytic effect towards many kinds of electrochemical reactions. . ." The Examiner alleges that it would have been obvious to

combine the teachings of *Christensen* with those of *Niyama* to arrive at the presently claimed invention.

Applicants have amended claims 20 and 21 to impose further limitations, at the suggestion of the Examiner. In particular, Applicants have amended the claims to recite specific elements of an ECL cell, namely a working electrode, a counter electrod, and a light detector and/or transparent portion of said flow cell in optical registration with said working electrode. In addition to Applicant's arguments previously presented in their Response dated November 16, 2006, Applicants submit that *Christensen* does not overcome any deficiencies of *Niyama* to arrive at the present invention. Specifically, *Christensen* teaches a reactor for electrochemical conversion of a material and is not directed to ECL. Moreover, *Christensen* discloses that the technical field of its invention relates to removing soot particles from flue gases and diesel engines. See *Christensen*, col. 1, lines 24-57. Although *Christensen* discloses the use of rhodium and rhodium alloys as electrodes, it would not have been obvious, based on the unrelated field, to combine its teachings with those of *Niyama* to arrive at the present invention. Likewise, one of skill would not have had a reasonable expectation of success by combining the *Christensen* electrodes with the *Niyama* ECL. Therefore, there would be no motivation to one of skill in electrochemiluminescence to combine these references. The present claim amendments further limit the scope of the present invention, and for at least this reason the rejection should be withdrawn.

REJECTION OVER *WOHLSTADTER*

The Examiner has rejected claims 25-32 under 35 U.S.C. § 103(a) as being unpatentable over *Wohlstadter* (U.S. Patent No. 6,207,369, "*Wohlstadter*"). The

Examiner acknowledges that *Wohlstadter* does not disclose a specific embodiment with the field extending electrodes but believes this would have been an obvious modification. Applicants respectfully traverse this rejection.

The rejected claims require that the counter electrode has a field extending element and that the field extending element is interposed between the transparent portion of a support and a working electrode. While the Examiner alleges that *Wohlstadter* does teach field extending electrodes,[1] having either wires/whiskers or indentations/wells to increase the surface area of the electrode and extend its electrical field, it does not teach this particular orientation of the ECL cell structures in *Wohlstadter.*

Applicants have amended claim 25 in order to clarify the geographical orientation of the claimed field extending elements. In particular, claim 25 recites an ECL cell such as the one illustrated in Fig. 1A, wherein the counter electrode (136) has field extending elements exemplified by Figs. 2B-2J. Those field extending elements are interposed between the working electrode (140) and a transparent portion (137) of "said support" (138). That geographical orientation is further defined in the specification at p. 13, line 18-p. 14, line 9 and p. 26 lines 5-23. The specification makes clear that the support is actually part of the ECL cell wall, and a counter electrode is attached to said support: "[T]he assay cell further comprises (e.g., in a cell chamber) a first surface that supports the first electrode and an opposing second surface that supports the second electrode and that has a transparent zone." p. 4, line 20 - p. 5, line 1. *See also*, p. 32, lines 13-

[1] Applicants wish to clarify the record. In their Response dated November 16, 2006, Applicants stated, "While Wohlstadter does teach..." p. 22. Applicants intended to state that the Examiner alleges this fact, as noted above.

16; p. 4, lines 5-10; p. 5, lines 7-12; and p. 7, lines 9-15. Therefore, the geographical placement of the elements of claim 25 includes a working electrode, a counter electrode, having field extending elements, and a transparent portion of the cell wall, where a counter electrode is sandwiched between a working electrode and a transparent portion of a support (the ECL cell wall). In contrast, Figure 19 of *Wohlstadter* illustrates that the working electrode and the counter have a "region of relatively constant width" between them. Col. 42, lines 32-36. No support possessing a transparent portion is shown to be in optical registration with the working and counter electrodes. Thus, no part of the counter electrode can be considered to be interposed between the working electrode and the transparent portion of the support, as required by claim 25.

With respect to claim 31, *Wohlstadter* does not teach or describe the limitation "capable of maintaining said counter electrode at a constant potential or at a potential that does not vary relative to a potential of said light detector." In ECL reactions, either the working electrode can be grounded, and the current to the counter electrode can be altered (as was done traditionally), or vice versa (as identified in the present invention). When the counter electrode is close to the light detector, changing the current in the counter electrode will affect the light detector due to capacitance between the counter electrode and light detector, resulting in a false or amplified signal. It is a well understood principle that capacitance increases as the distance between objects decreases. There are two ways of accomplishing this goal or reducing capacitance between these two structures. One is to ground both structures, and the other is to

keep them both at the same potential. The above claim limitation intends to encompass both of these options. The specification states:

> The generation of ECL in an ECL cell generally involves the application of an electrical potential across at least two electrodes. In a preferred embodiment of the invention, an ECL instrument is configured so that the closest of the electrodes to the light detector (preferably a counter electrode) is held, during the induction and measurement of ECL, at a constant potential, most preferably at the ground potential. In another preferred embodiment, an ECL instrument is configured so that the closest of the electrodes to the light detector (preferably a counter electrode) is held at the same potential as a voltage of the light detector (preferably a photodiode), most preferably at ground.

Specification, paragraph bridging pages 33-34.

As described in the present specification on page 35, lines 5-13, this relationship between the two potentials is advantageous by reducing "the noise component of the signal produced by the light detector during an ECL measurement that results from capacitive coupling of the electrodes to the light detector."

In particular, this limitation reduces any interference during the measurement at the light detector. Otherwise, an inaccurate measurement could occur due to the capacitive coupling. *Wohlstadter* does not teach or even suggest this limitation. Merely because *Wohlstadter* shows connections between the counter electrode and light detector does not mean that it had used this particular wiring configuration.

The Office has not addressed either limitation, nor does the Office point to any particular structure in *Wohlstadter* to provide any further basis for these conclusions. The initial burden is on the Examiner to establish a prima facie case of obviousness. In establishing the rejection "'[t]he examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in

light of the teachings of the references.'" MPEP 2142 (citations omitted). Because the Examiner offers no explanation for his conclusion of obviousness, this rejection is improper and should be withdrawn.

REJECTION OVER *NIYAMA* IN VIEW OF *WOHLSTADTER*

The Examiner has rejected claims 10-19 and 33-36 under 35 U.S.C. § 103(a) as being unpatentable over *Niyama* in view of *Wohlstadter*. The Examiner concludes that "[i]t would have been obvious to modify the *Niyama* device to include a transparent support and a flow cell such as taught by *Wohlstadter* in order to provide a support of a suitable material to observe reactions inside the electrochemiluminescence cell and to provide a flow cell for commercial applicability."

Applicants respectfully traverse this rejection. With respect to claims 10-19, these claims depended from claims previously rejected over *Niyama* alone which rejection was addressed above. *Wohlstadter* does not teach electrodes made of any alloys. Therefore, *Wohlstadter* does not compensate for any of the prior deficiencies of *Niyama* regarding the electrodes. Therefore, combining *Niyama* and *Wohlstadter* does not render claims 10-19 unpatentable for the same reasons presented above.

Regarding claim 11, this claim also contains the limitation that the counter electrode comprises at least one field extending element interposed between said transparent portion and said working electrode. As discussed above, *Wohlstadter* does not teach or suggest this particular arrangement of ECL cell components, nor does the Examiner suggest that *Niyama* compensates for this deficiency.

Claims 33-36 depend from claims 31-32, which were addressed above. Because *Wohlstadter* does not teach or even suggest the arrangement of the elements of the

ECL cells of claims 31-32, these dependent claims cannot be obvious, regardless of what *Wohlstadter* teaches above the additional limitations in the dependent claims. Additionally, with respect to claim 31, neither *Wohlstadter* nor *Niyama* teach or describe the limitation "capable of maintaining said counter electrode at a constant potential or at a potential that does not vary relative to a potential of said light detector." As described in the specification on page 35, lines 5-13, this structure is advantageous by reducing "the noise component of the signal produced by the light detector during an ECL measurement that results from capacitive coupling of the electrodes to the light detector." *Wohlstadter* and *Niyama* both have sources of electrical energy attached to the electrodes, but none describe the configuration in the aforementioned limitation. Therefore, Applicants request that this rejection be withdrawn.

REJECTION OVER *LILJESTRAND* AND *NIYAMA*

As discussed in the November 16, 2006, Response, the Examiner has rejected claims 1-36 under 35 U.S.C. § 103(a) as being obvious over *Liljestrand* (U.S. Patent No. 6,200,531, "*Liljestrand*") in view of *Niyama*. According to the Examiner, *Liljestrand* teaches an apparatus for carrying out electrochemiluminescence tests measurements. The apparatus includes a flow cell that comprises a counter electrode, ECL test chamber, working electrode, and the flow cell includes a main housing formed of a transparent chemically inert material. Although the Examiner concedes that *Liljestrand* does not teach that the electrodes are platinum or iridium alloys, he concludes that it would have been obvious to combine *Liljestrand* with *Niyama* to arrive at the present invention. Again, the Examiner is relying on *Niyama* for the limitations of claims 1-24 regarding the composition of the electrodes. As we have argued previously, *Niyama*

does not teach the particular electrode compositions claimed, and the Examiner does not rely on *Liljestrand* for the electrode compositions or suggest that *Liljestrand* compensates for any of the deficiencies of *Niyama*.

Regarding claims 25 and 27, *Liljestrand* does not teach the counter electrodes as presently claimed. Specifically, the claimed electrode exclude counter electrodes that are comprised of a mesh or screen, and dependent claim 27 recites a ladder electrode not accounted for in the present rejection.

Finally, with respect to claim 31, neither *Liljestrand* nor *Niyama* teach or describe the limitation "capable of maintaining said counter electrode at a constant potential or at a potential that does not vary relative to a potential of said light detector." As described in the specification on page 35, lines 5-13, this structure is advantageous by reducing "the noise component of the signal produced by the light detector during an ECL measurement that results from capacitive coupling of the electrodes to the light detector."

For at least the reasons detailed above regarding *Niyama*, it would not have been obvious to one skilled in the art to modify *Liljestrand* in view of *Niyama* to achieve the present invention. In addition, *Liljestrand* in view of *Niyama* does not teach or even suggest the presently amended claims. Therefore, the rejection should be withdrawn.

VI. Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: December 21, 2006

By: Rebecca M. McNeill
Rebecca M. McNeill
Reg. No. 43,796

Attachments: Replacement Sheet - one sheet replacing Figures 14 and 15.
Annotated Sheet showing change.

Annotated Sheet

FIG. 14

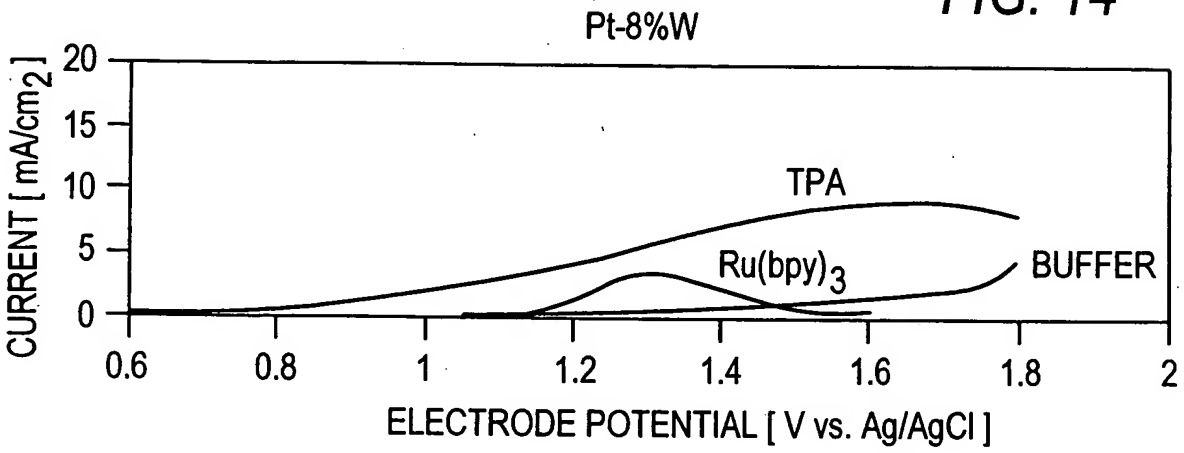

FIG. 15